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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* GREG A. DUNKO

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Appeal 2009-002301  
Application 10/823,069  
Technology Center 2600

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Decided: January 28, 2010

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Before  
JOHN A. JEFFERY, CARLA M. KRIVAK, and  
BRADLEY W. BAUMEISTER, *Administrative Patent Judges*.

BAUMEISTER, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1, 3, 5-7, 9, 11-14, 16, 18-20, 22, 24, and 26-36. Claims 2, 4, 8, 10, 15, 17, 21, 23, and 25 have been canceled (App. Br. 2). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

## STATEMENT OF THE CASE

Appellant's invention relates to cell phones, pagers, and other portable electronic devices that include an embedded antenna and an operatively associated impedance matching circuit (Spec. 1-2). More specifically, Appellant's invention relates to such an impedance matching circuit that includes at least one parameter, such as resistance, capacitance or inductance, that may be adjusted based upon the configuration of the portable electronic device's housing (Spec. 2-3). For example, when a sensor determines the configuration of a flip (or jack-knife) housing (e.g., open or closed configuration), an associated processor may locate a value for the at least one parameter from a lookup table, and the at least one parameter of the multi-mode matching circuit is then adjusted based upon the detected housing configuration (Spec. 3, 9, 10).

The invention is not limited to sensing only two housing configurations, but may also be applied to situations where the mobile terminal housing may have configurations of half open, three-quarters open, and the like (Spec. 7). Parameters for the matching circuit may also be adjusted based upon whether the mobile terminal's camera is protruded or retracted (Spec. 9).

Independent claim 1 is illustrative, reading as follows:

1. A portable electronic device, comprising:
  - a housing;
  - an antenna associated with the housing;
  - a multi-mode matching circuit operatively associated

with the antenna, the multi-mode matching circuit being configured to operate in a first mode when the housing of the portable electronic device is in a first configuration and in a second mode when the housing of the portable electronic device is in a second configuration; and

a sensor operatively associated with the multi-mode matching circuit, wherein the sensor is configured to detect the first configuration of the housing of the portable electronic device and/or the second configuration of the housing of the portable electronic device and wherein the multi-mode matching circuit is configured to adjust at least one parameter of the multi-mode matching circuit responsive to the first and/or second detected configurations of the housing of the portable electronic device, and wherein the at least one parameter is stored in a lookup table; and

a processor operatively associated with the sensor, the processor being configured to locate the at least one parameter in the lookup table using the first and/or second detected configuration of the housing of the portable electronic device as a pointer for an entry in the lookup table.

The Examiner relies on the following prior art references to show unpatentability:

Choo	US 2004/0110541 A1	June 10, 2004 (filed Nov. 26, 2003)
Choi	US 2004/0185920 A1	Sep. 23, 2004 (filed Jan. 28, 2004)
Kim	US 6,862,432 B1	Mar. 1, 2005 (filed July 27, 2000)

Claims 1, 3, 5-7, 9, 11-14, 16, 18-20, 22, 24, and 26-30 stand rejected under 35 U.S.C. § 102(e) as anticipated by Kim.

Claims 31-33, 35, and 36 stand rejected under 35 U.S.C. § 103(a) as obvious over Kim in view of Choi.

Claim 34 stands rejected under 35 U.S.C. §103(a) as obvious over Kim in view of Choi and Choo.

### ARGUMENTS<sup>1</sup> AND ISSUES

*Claims 1, 3, 5-7, 9, 11-14, 16, 18-20, 22, 24, and 26-30<sup>2</sup>*

Appellant contests the Examiner's finding that Kim discloses storing "parameters" as required by claim 1 (App. Br. 7-8; Reply Br. 2). Appellant does acknowledge that "the solution discussed in Kim is specific to stored voltages and use of variable capacitance diodes" (App. Br. 8). Appellant also acknowledges that "voltages are information" and further argues that "Kim specifically states that the non-volatile memory [ ] stores a voltage value" (Finding of Fact (FF) 2 *infra*). However, Appellant argues that "the Examiner cannot just replace the word voltage with the word parameter and conclude that these words mean the same thing" (Reply Br. 2).

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<sup>1</sup> Rather than repeat the arguments of Appellant or the Examiner, we refer to the following documents for their respective details: (1) the Appeal Brief ("App. Br.") filed October 1, 2007; (2) the Examiner's Answer ("Ans.") mailed December 28, 2007; and (3) the Reply Brief ("Reply Br.") filed February 27, 2008. In this decision, we have considered only those arguments actually made by Appellant. Arguments which Appellant could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

<sup>2</sup> Appellant argues claims 1, 3, 5-7, 9, 11-14, 16, 18-20, 22, 24, and 26-30 together as a group (App. Br. 7-8). Accordingly, we select independent claim 1 as representative of these claims. *See* 37 C.F.R. § 41.37(c)(1)(vii).

The first issue before us, then, is: Has Appellant shown the Examiner erred in finding that Kim's stored voltage values may be interpreted as constituting "parameters" as recited in claim 1?

*Claims 31-33, 35, and 36<sup>3</sup>*

Independent claim 31 recites, *inter alia*, "the multi-mode matching circuit being configured to operate in at least three modes corresponding to respective first through third configurations of the housing." The Examiner acknowledges that Kim discloses two – not three – housing configurations, but finds that Choi teaches a foldable phone having at least three housing configurations, or opening positions, that are detected by magnetic sensors (Ans. 8). The Examiner also finds that motivation existed "to incorporate at least three opening positions and modes taught by Choi [ ] into the portable electronic device of Kim [ ] in order to provide more modes with auto-detection" (*id.*).

Appellant acknowledges that Choi's phone has four states, but asserts the following arguments: (1) Choi does not "disclose[ ] or suggest a multi-mode matching circuit being configured to operate in at least three modes corresponding to respective first through third configurations of the housing," but rather senses the housing configuration for different purposes; (2) no adequate motivation or suggestion exists to combine the references; and (3) the Examiner's

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<sup>3</sup> Appellant argues claims 31-33, 35, and 36 together as a second group (App. Br. 9-10). Accordingly, we select independent claim 31 as representative of these claims.

obviousness rejection is a product of impermissible hindsight reasoning (App. Br. 9-10).

The second issue before us, then, is: Has Appellant shown the Examiner erred in finding that the cited prior art collectively teaches or suggests providing a portable electronic device with a multi-mode matching circuit that is configured to operate in at least three modes corresponding to respective first through third configurations of the device's housing?

*Claim 34*

Claim 34 depends from claim 31 and additionally recites that the portable electronic device "further compris[es] a camera configured to protrude from the portable electronic device during camera functionality and to retract when not in use, wherein the first through third configurations of the portable electronic device correspond to relative positions of the camera." The Examiner further combines Choo with Kim and Choi to teach this missing feature (Ans. 9, 10, 13). Appellant argues that Choo's photographic device is integrated into Choo's portable electronic device and does not protrude (App. Br. 11).

The third issue before us, then, is: Has Appellant shown the Examiner erred in finding that the cited prior art collectively teaches or suggests a camera configured to protrude and retract from a portable electronic device?

**FINDINGS OF FACT**

The record supports the following Findings of Fact (FF) by a preponderance of the evidence:

*Appellant's Statements*

1. The multi-mode matching circuit 27 may be, for example, an impedance matching circuit and may be configured to adjust one or more parameters or tuning coefficients, for example, a resistance, capacitance and/or an inductance [ ] of the multi-mode matching circuit responsive to the detected configuration of the housing of the mobile terminal 22.  
(Spec. 7:9-13).
2. “Kim specifically states that the non-volatile memory 31 stores a voltage value” (Reply Br. 2).

*Kim*

3. [Kim's] device for matching an antenna impedance in a portable radio telephone includes a folder sensor for sensing a folded state or an unfolded state of the folder casing, a controller for controlling a voltage according to a casing state sensed at the folder sensor, and a matching circuit having a variable capacitance diode for matching an impedance of the antenna and an impedance of a transmission/reception circuit according to the voltage of the [digital to analog (DAC)] controller.  
(col. 2, ll. 10-18).

*Choo*

4. A folding type mobile communication terminal includes an integrated “photographic apparatus 160 [ ] rotatively installed on one side of a hinge connection element 150, which rotatively connects the upper body 130 to the lower body 110” (¶ [0030]).

*Webster's Dictionary*

5. Webster's New Universal Unabridged Dictionary 2 ed. (1983) includes the following definitions:



protrude – “to thrust out or forth; to cause to move outward or to project, as from confinement or from a small opening;” and “to jut out” (*id.* 1449).

retract – “to draw back or in” (*id.* 1548).

## PRINCIPLES OF LAW

“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *See In re Royka*, 490 F.2d 981, 985 (CCPA 1974). In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). If the Examiner’s burden is met, the burden then shifts to Appellant to overcome the *prima facie* case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). Appellant has the burden on appeal to the Board to demonstrate error in the Examiner’s position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006).

## ANALYSIS

*Claims 1, 3, 5-7, 9, 11-14, 16, 18-20, 22, 24, and 26-30*

Appellant has not shown the Examiner erred by finding that Kim's stored voltage values may be interpreted as constituting "parameters" as recited in claim 1.

Appellant argues that "the Examiner cannot just replace the word voltage with the word parameter and conclude that these words mean the same thing" (Reply Br. 2). However, Appellant has not explained why a voltage cannot be considered a "parameter." Appellant's Specification does not set forth any express definition for the claim term "parameter." In fact, Appellant describes "parameters" as "numerical values" used to program circuit elements of an impedance matching circuit such as resistors, capacitors, and/or inductors (FF 1). Appellant also acknowledges that Kim's non-volatile memory stores a voltage *value* (FF 2). Moreover, Kim discloses that the digital to analog controller (DAC) inputs this stored voltage value into the impedance matching circuit for setting the capacitance of the variable capacitance diode (FF 3). Restated, Kim's voltage value is a numerical value used to program the capacitance of Kim's impedance matching circuit. As such, we see no reason why the voltage values disclosed by Kim are not "parameters" as recited by claim 1.

For the foregoing reasons, Appellant has not persuaded us of error in the Examiner's anticipation rejection of representative claim 1. We accordingly sustain the Examiner's rejection of claim 1 and also claims 3, 5-7, 9, 11-14, 16, 18-20, 22, 24, and 26-30, which fall with claim 1.

*Claims 31-33, 35, and 36*

Appellant has not shown the Examiner erred in finding that the cited prior art collectively teaches or suggests providing a portable electronic device with a multi-mode matching circuit that is configured to operate in at least three modes corresponding to respective first through third configurations of the device's housing.

Appellant's argument – that Choi does not disclose or suggest “a multi-mode matching circuit being configured to operate in at least three modes corresponding to respective first through third configurations of the housing” (App. Br. 9) – is not persuasive. This argument, directed to the teaching of Choi alone, does not address whether Choi, in combination with Kim, discloses this limitation. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Appellant's further arguments – that no adequate motivation or suggestion exists to combine the references, and that the rejection is a product of impermissible hindsight reasoning (App. Br. 9) – are also not persuasive. Appellant does not dispute that Kim discloses every element of claim 31 except for a third mode of a multi-mode matching circuit that corresponds to a third housing configuration (*see* App. Br. 9-10). Appellant does not dispute that Choi teaches a foldable phone with at least three housing configurations associated with respective functionalities or modes (*see* Ans. 7-8; App. Br. 9-10). As such, it seems to follow that if one of ordinary skill in the art desired to include, within Kim's foldable telephone,

additionally known functionalities that have associated housing folding positions other than fully open or closed, one would have desired to account for the additional impedances resulting from these additional folding positions as well. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

For the foregoing reasons, Appellant has not persuaded us of error in the Examiner’s obviousness rejection of representative claim 31. We accordingly sustain the Examiner’s rejection of claim 31 and also claims 32, 33, 35, and 36, which fall with claim 31.

*Claim 34*

Appellant has shown the Examiner erred in finding that the cited prior art collectively teaches or suggests a camera configured to protrude and retract from a portable electronic device.

Appellant and the Examiner appear to agree on the facts: (1) Choo alone is being relied upon for teaching this limitation; (2) Choo’s camera is integrated into the hinge of a mobile phone’s foldable housing hinge; and (3) the camera eyehole rotates from a blocked position when the housing is closed to an exposed position when the housing is opened (*see* Ans. 9, 13; App. Br. 11; FF 4). The only question is whether the camera positions resulting from this rotation may be interpreted as constituting protruded and retracted positions as alleged by the Examiner.

We find this interpretation to be unreasonable. While the Examiner states that this interpretation is according to a dictionary definition (Ans. 13),

the Examiner's Answer does not make of record either the precise definition being relied upon or the dictionary from which this definition was obtained (*see* Ans. 9-10, 13). Moreover, we understand "protrude" to alternatively mean to thrust, project, or jut out (FF 5). We understand "retract" to alternatively mean to draw back or draw in (*id.*). These general meanings do not seem to describe a camera that is rotated to either expose or cover its eyehole as asserted by the Examiner.

For the foregoing reasons, Appellant has persuaded us of error in the Examiner's obviousness rejection of claim 34. Accordingly, we will not sustain the Examiner's rejection of claim 34.

### CONCLUSIONS

Appellant has not shown the Examiner erred in finding that Kim's stored voltage values may be interpreted as constituting "parameters" as recited in claim 1. Accordingly, Appellant has not shown that the Examiner erred in rejecting claims 1, 3, 5-7, 9, 11-14, 16, 18-20, 22, 24, and 26-30 under 35 U.S.C. § 102.

Appellant has not shown the Examiner erred in finding that the cited prior art collectively teaches or suggests providing a portable electronic device with a multi-mode matching circuit that is configured to operate in at least three modes corresponding to respective first through third configurations of the device's housing. Accordingly, Appellant has not shown that the Examiner erred in rejecting claims 31-33, 35, and 36 under 35 U.S.C. § 103.

Appellant has shown the Examiner erred in finding that the cited prior art collectively teaches or suggests a camera configured to protrude and retract from a portable electronic device. Accordingly, Appellant has shown that the Examiner erred in rejecting claim 34 under 35 U.S.C. § 103.

#### DECISION

We affirm the Examiner's decision rejecting claims 1, 3, 5-7, 9, 11-14, 16, 18-20, 22, 24, 26-33, 35, and 36.

We reverse the Examiner's decision rejecting claim 34.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1). *See* 37 C.F.R. § 1.136(a)(1)(iv).

#### AFFIRMED-IN-PART

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